


# DSP-Z9

Digital Home Theater Amplifier

Extraordinary capabilities  
for the finest home theater  
performance





# Only Yamaha could set these goals — and achieve them!

The DSP-Z9 was developed to achieve four ambitious goals:  
deliver the highest sound quality, provide the highest  
picture quality, present the best surround realism  
and be the easiest amplifier to use.

We believe we succeeded in all four areas, but we invite  
you to judge for yourself — we're confident that  
the DSP-Z9 will totally satisfy your highest expectations.



## Highest Sound Quality

The DSP-Z9 offers the industry's most advanced audio technology, circuitry and component parts, backed by over a century of experience and an undiminished commitment to "natural sound."

## Highest Picture Quality

As the central control unit in a home theater system, the DSP-Z9 interfaces with video source and display components to ensure that video performance is on a par with the sound quality.

## Best Surround Realism

Yamaha developed its audio and cinema digital sound field processing technology decades ago and has been refining it ever since. The DSP-Z9 offers an unrivaled, breathtaking surround sound experience.

## Easiest to Use

Yamaha amplifiers have a long history of introducing features that enhance operating ease. The DSP-Z9 continues this tradition with one major convenience breakthrough and many other advanced features.





# Highest Sound Quality

Yamaha has a genuine commitment to providing absolutely the finest sound quality possible in every component we create. With over a century of experience in sound production (we made our first reed organ in 1887) and our status as a world leader in acoustic and electronic musical instruments, we are passionate about creating and reproducing sound in the most beautiful and natural way. Over the years, with each new series of components, we have improved and refined audio performance, and the DSP-Z9 maintains this tradition with an impressive array of technology and features.

## High Performance Digital Circuitry

This section exemplifies the Digital ToP-ART (Total Purity Audio Reproduction Technology) concept of maximizing the quality of the digital circuitry while minimizing analog circuitry, and also maintains a straight and logical circuit layout for optimum signal purity. It includes a variety of sophisticated technology, beginning with Burr-Brown 192kHz/24-bit digital-to-analog converters for all channels with DSD (Direct Stream Digital) compatibility. Accurate-Touch Volume Control LSIs (Yamaha YAC520) are also used for all channels. The digital bass and treble tone controls have turnover frequencies for the front L/R and center channels. Eight-channel analog input signals are processed by 96kHz A/D conversion for highest quality. All circuitry is on a four-layer processing board in a fully shielded cabinet for reduced digital interference.

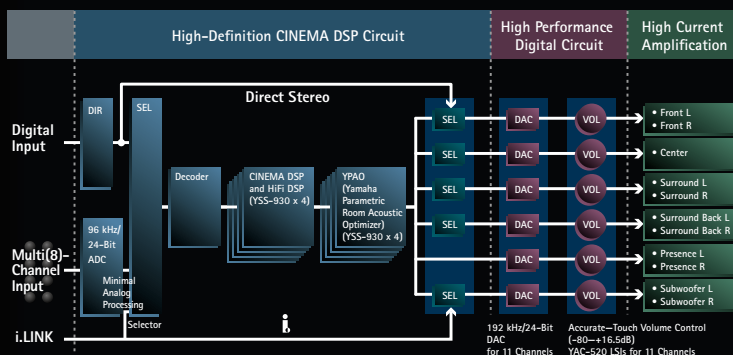
## 9-Channel Amplifier Capable of Delivering 1,890W

When you power up your carefully assembled, top class home theater system, you expect beautiful sound and video quality, but you also want plenty of raw power. Especially at dynamic peaks, such as explosions or the climax of rock songs, you want to be thrilled and awed, without a hint of distortion marring the moment. The DSP-Z9 is built to satisfy your urge for power, surrounding you front, sides and rear with seven channels capable of outputting a huge 250 watts each, plus another 70W from the two presence (front effect) channels. That's a total of 1,890W, which will impress your friends, and even your neighbors if you so choose. Movies will sound as if you're in the director's chair, and you can even enjoy multi-channel sources from only four or five speakers (even without a subwoofer, although this is not recommended), thanks to a 6-4 mixdown mode. Another point to consider is that because of this high power capability, at normal listening levels the amplifier won't be working as hard, so distortion levels are virtually zero.

## High Current Amplification

Although power rating is often the first thing people look at in an amplifier, high power output does not necessarily mean good sound. High current level is a much more important factor, so Yamaha developed the High Current Amplification system, which overcomes two problems common

**DIGITAL  
ToP-ART**  
Total Purity  
Audio Reproduction Technology



**Digital ToP-ART Design** Digital ToP-ART (Total Purity Audio Reproduction Technology) is a Yamaha product development philosophy that combines advanced digital engineering and circuit design to maximize audio signal purity. It is used in three sections of the amplifier, the High Performance Digital Circuitry and High Current Amplification (explained right) and the High Definition CINEMA DSP circuitry (explained on page 10), each of which employs the world's highest grade parts and most sophisticated LSIs. Digital ToP-ART enables the DSP-Z9 to deliver superb sound quality and bring out the full potential of Yamaha's amazing CINEMA DSP technology.



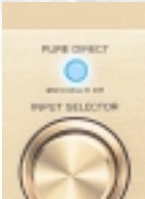
to ordinary amplifiers. The first is a difference in voltage between the power supply and amplifier circuits caused by current fluctuations. This was solved by using custom-made, high-grade block electrolytic capacitors and a copper grip for one-point grounding. Another current drop is generally seen between the amplifier circuit and the speaker terminals, caused by the cables, speaker output relays, copper circuit boards, and so on. To avoid this problem, we used an extra-large, low-impedance toroidal transformer and gold-plated speaker relay contacts. As a result, the DSP-Z9 achieves low impedance, high current

power from input (power supply circuit) to output (speaker terminals). This drives the speakers much more smoothly and dynamically, for better sound from all sources, including 2-channel audio.

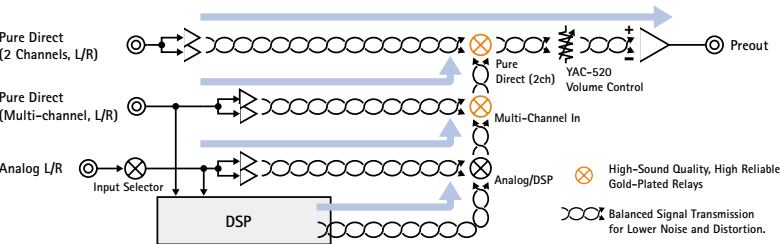
**Choice of Signal Paths for Optimum Quality**

The DSP-Z9 gives you a choice of specialized signal paths, ensuring that you can obtain the purest signal quality possible. Pure Direct provides the shortest possible signal path for two-channel or multi-channel analog inputs, with no signal processing and no display. Straight

outputs the original analog or digital signal without any post-processing. i.LINK provides a digital connection for DVD-Audio Linear PCM, Super Audio CD DSD (Direct Stream Digital) and other high quality audio sources. And Direct provides a direct connection for analog stereo/multi-channel input and digital stereo/multi-channel (via i.LINK) input, with a dimmed display.



DSP-Z9 Front Channel Signal Flow



Differences between three front specialized signal paths

Selection	Front Panel & Remote	Front Panel & Remote	Program
Sources	2-Ch Analog (Direct Input)/ Multi-Ch Analog	Analog & Digital	Analog & Digital (PCM/DSD)
A/D Conversion	—	Yes	No
Decoding	—	Yes	No
Post-processing	—	No	No (Bypass)
YPAO Spkr. Config.	—	Yes	No (Bypass)
YPAO Tone Control	—	Yes	No
YPAO Spkr. Level	No	Yes	No
Display	Off	Yes	Dimmed



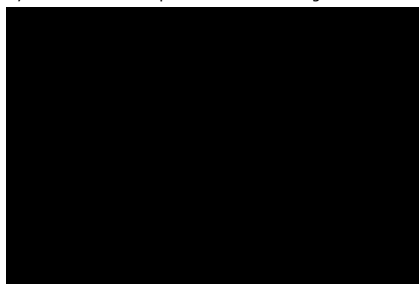
DSP-Z9 Digital Home Theater Amplifier



### Symmetrical Power Amplifier Circuitry

The High Current Amplification system uses a symmetrical, full push-pull circuit configuration with a complementary FET input stage. This ensures balanced output with no signal interference and highest slew rate (rate at which signal changes; affects high frequency response). Furthermore, the massive toroidal transformer and large capacity block electrolytic capacitors (28,000 $\mu$ F) ensure a consistently stable power supply.

Symmetrical Power Amplifier Circuit Block Diagram



### 9-Band Graphic Equalizer

In addition to the many audio parameters that can be adjusted via the on-screen menus, the DSP-Z9 gives you an even greater degree of sound field control with the inclusion of a 9-band graphic equalizer. You can use it to "fine tune" the sound field to achieve the optimal imaging for movie sound.

### Digital Tone Controls

The front left, front right and center channels have digital tone controls, allowing an extremely precise degree of control over the front sound field.

### Subwoofer Crossover Selection

The DSP-Z9 provides a choice of nine subwoofer crossover frequencies: 40, 60, 80, 90, 100, 110, 120, 160 and 200 Hz. In addition to providing a wider range than other amplifiers, the steps from 80 to 120 Hz are only 10 Hz apart for more precise selection. This choice of crossovers lets you "fine-tune" the audio system by selecting the optimum frequency to maximize amplifier/speaker efficiency and also ensures best performance from a wider variety of speakers (small to large).

### Effective Linear Damping

Level variations due to high impedance tend to reduce an amplifier's damping factor (ability to control unwanted speaker cone movement at low frequencies), and frequency variations cause it to fluctuate. Yamaha's Linear Damping circuit cancels the effect of these variations, maintaining a high, stable damping factor for superior sound articulation and frequency response.

### Accurate Touch Volume Control

No one expects more from a volume control than up and down — except Yamaha. We decided that controlling the volume could be made both easier and more accurate, and the result is the Accurate Touch Volume Control. It lets you make delicate adjustments within a narrow range, yet enables you to move to very high or low levels more quickly. Its extreme accuracy, with negative gang error of less than 0.5dB, due to a high signal resolution analog design in conjunction with ultra-precise digital control circuits (Yamaha original YAC-520 LSIs) for all channels. The wide control

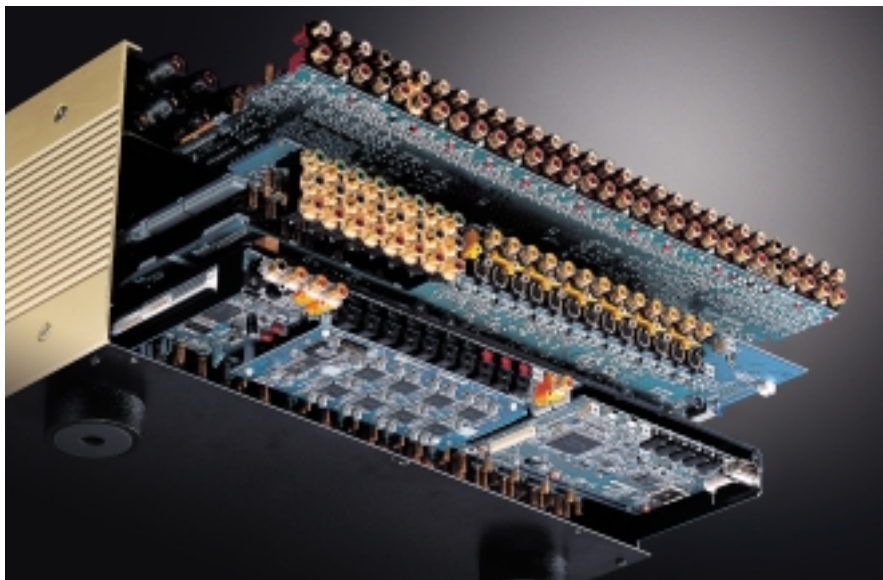
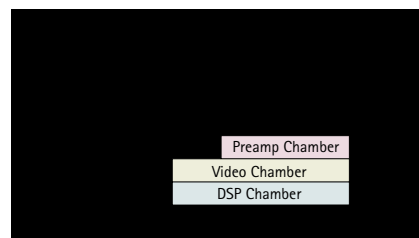


Accurate Touch volume control device (Yamaha YAC-520 LSI)

range extends from -80dB to +16.5dB, with narrow 0.5dB steps throughout the entire range for delicate control, even at low volumes.

### High Grade Construction with Independent Chambers and Anti-Vibration Design

The DSP-Z9 uses a heavy-duty, rigid chassis construction with separate chambers for individual chambers for left and right power amplifiers, power supply and control section to prevent any chance of internal interference. This thick chassis also has electromagnetic shielding. The extremely large aluminum-extruded heat sinks have anti-resonance characteristics and ensure effective heat dissipation. Supporting all this are Yamaha's ToP-ART base and feet, which provide stability and further vibration-damping.





Gold-Plated Extruded, Extra-Large, Speaker Terminals

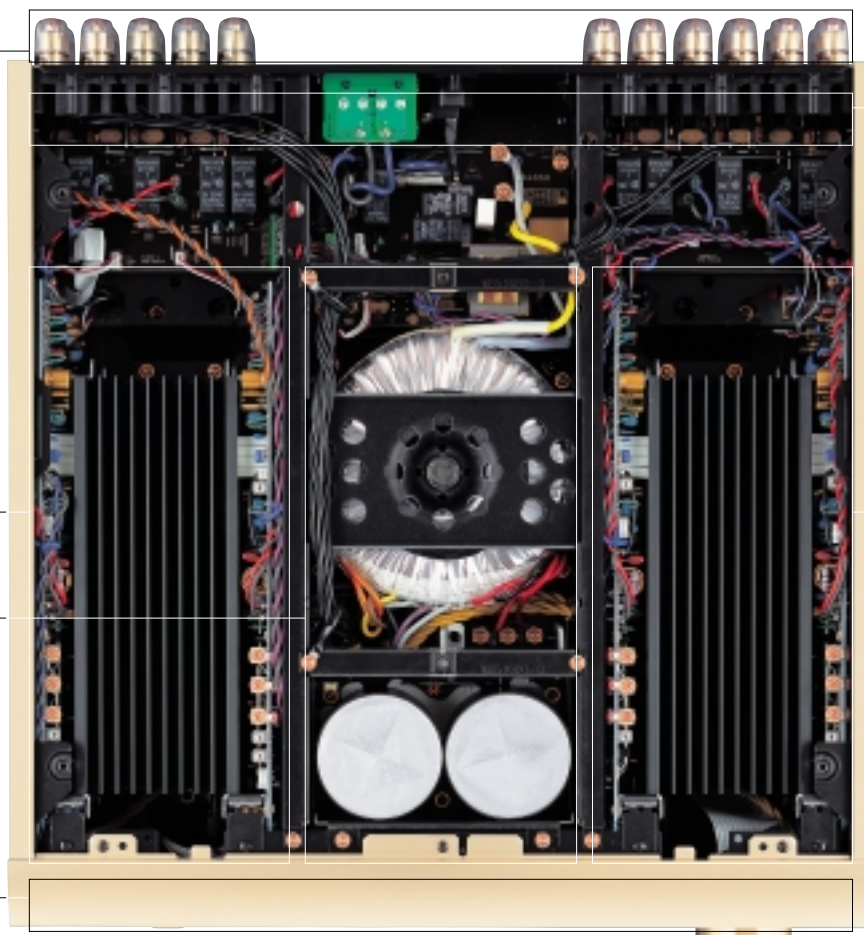
Power Amplifier (Left) with Large, Anti-Resonance, Aluminum-Extruded Heat Sink

Power Supply Chamber with Extra-Large Toroidal Transformer and Extra-Large Custom-Made Block Electrolytic Capacitors (28,000 $\mu$ F)

Control Section

Two Direct Signal Path Speaker Relays with Gold-Plated Crossover Connection and Shielding

Power Amplifier (Right) with Large, Anti-Resonance, Aluminum-Extruded Heat Sink



### Only the Finest Parts are Used in This Amplifier

At this degree of extreme sound quality, each and every part in the amplifier makes a difference. Yamaha technicians tested, selected and in many cases custom-designed all parts, and then tested them in groups to ensure that they sounded good together. Particularly noteworthy parts, in addition to the transformer and capacitors, include:

- Schottky Barrier diodes allow fast switching for high S/N ratio.
- Thick PC board wiring with 1.6mm diameter copper jumper cables.
- Two direct signal path speaker relays with gold-plated crossover connections and shielding.
- Gold-plated extruded, extra-large speaker terminals.

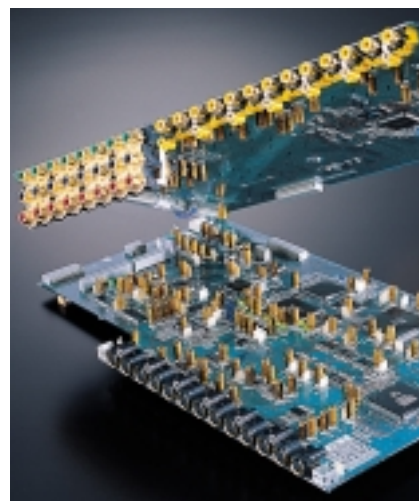


# Highest Video Quality

As one of the first companies to popularize "home theater" and a leader in the field, Yamaha is naturally committed to visual as well as audio excellence. We want our customers' enjoyment of movies and other video sources to be totally satisfying. Our home theater line includes a number of high performance products, including projectors, DVD players and a plasma monitor, but in terms of our home theater components, we design them to deliver the finest possible video signal to the display component. The DSP-Z9 accomplishes this more adroitly than any other amplifier, so you enjoy superb image quality to complement the incredible surround sound.

## Digital Video Up and Down Conversion

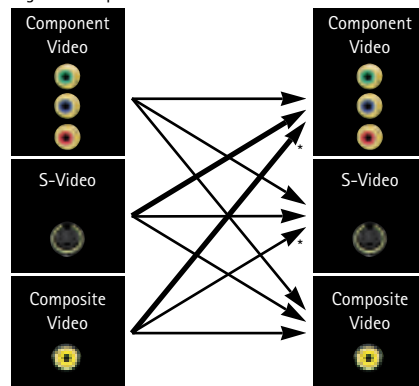
One way of ensuring the highest video quality for your home theater system is to use the best possible video signal. The DSP-Z9 automatically upgrades the input signal (composite to S-Video or component, S-Video to component) to the one that your monitor/TV can accept. This means that you simply use the best possible cable between the amplifier and the monitor/TV, and then whatever the source is, you are assured of getting the highest possible quality.



**Digital Video Processing Board**

All digital video processing circuitry is on a single board, housed in its own separate chamber to completely avoid interference from other circuitry.

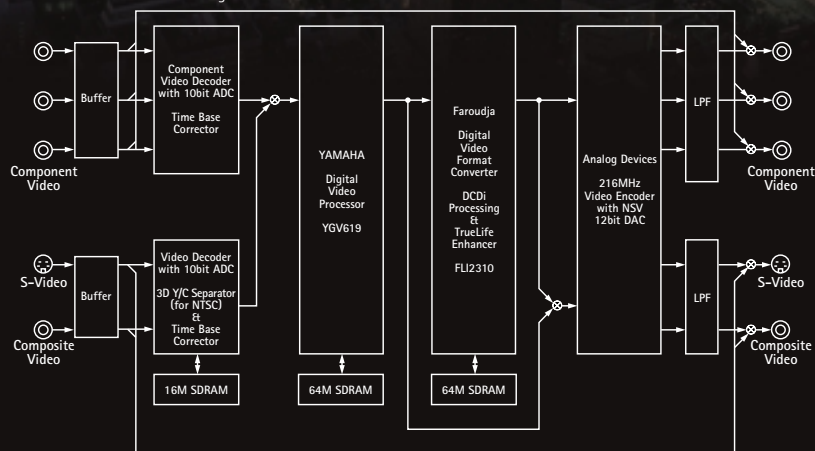
## Digital Video Up and Down Conversion



Up video conversion (composite to S-Video and component, S-Video to component) as well as down video conversion (S-video to composite) is automatically applied to incoming signals.

\* 480i and 576i (PAL) only

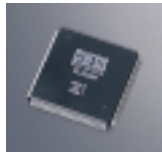
**DSP-Z9 Video Circuit Block Diagram**





### DCDi Processing

The DSP-Z9 is the first receiver to offer Faroudja's DCDi Processing, which is selectable and ensures that images are smooth and natural, without staircasing or jaggies.



Faroudja DCDi processing LSI (FLI 2310)

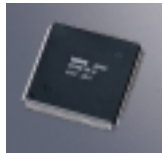
### Noise Shaped Video™

This technology, from Analog Devices, uses oversampling and advanced techniques such as multi-bit sigma-delta processing and bit-shuffling to improve converter performance by moving converter noise to an area of the spectrum where it can be removed by an analog filter. This improves the accuracy of signal representation, allowing images to be displayed at much higher resolutions.



### Progressive Scan Video Output and Other Video Technologies

The DSP-Z9 is the first amplifier to provide Progressive Scan Video Output, for use with high definition monitors. With almost twice as much video data, it provides a sharper,



YGV-619 video processor LSI (Yamaha original)

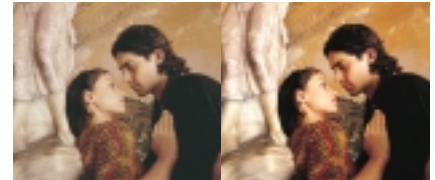
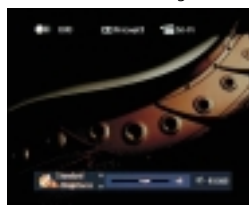
noise-free picture with clearer details. The progressive circuit is an 3:2 Pull-Down Detection type, and gives you the benefit of progressive scanning even if your DVD player does not have it. Other video technologies include 216MHz/12-bit Video D/A Conversion, Motion Adaptive Noise Reduction, Cross Color Suppression, Aspect Ratio Conversion, a Time Base Corrector that prevents the wavy distortion seen in video tapes and TrueLife Enhancer by Faroudja that brings out details in the picture, producing a more life-like image.

### HDTV (720i/1080i) Compatible Component Video Out

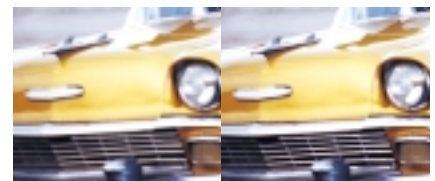
The frequency response of the component video monitor out signal is 5Hz-100MHz, making it compatible with HDTV monitors.

### Image Adjustment

To ensure that the high quality image looks precisely the way you want it to, the DSP-Z9 includes an extremely detailed Image Adjustment function. You can select three modes, Cinema, Standard or Dynamic, and within those modes, you can "fine-tune" five parameters: Enhancer, 3D NR, Brightness, Contrast and Saturation. You can then store your final adjustments in the user memory for recall at any time.



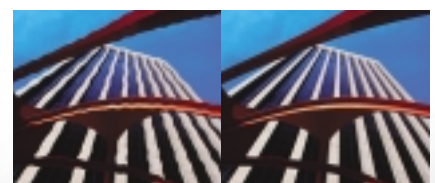
Before TrueLife Enhancer (Left) vs. After TrueLife Enhancer (Right)



Without Film Mode (Left) vs. With Film Mode (Right)



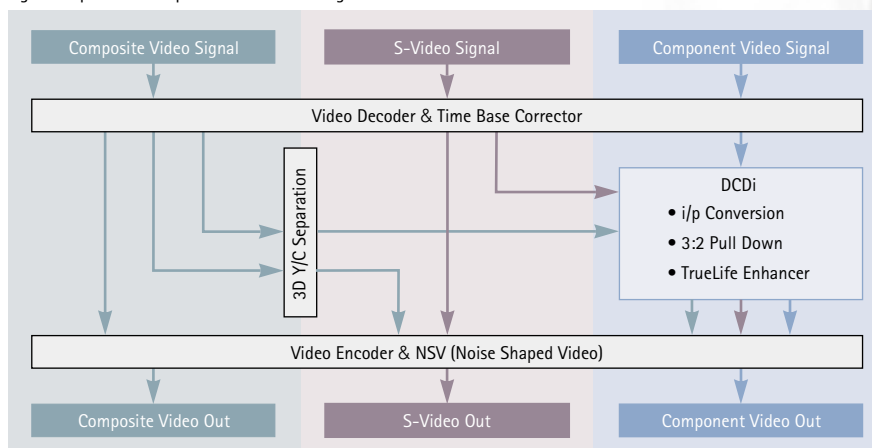
DCDi Off (Left) vs. DCDi On (Right)



Time Base Corrector Off vs. Time Base Corrector On (Right)

Above images are simulated.

### Digital Component Video Up Conversion Circuit Configuration



# Best Surround Realism

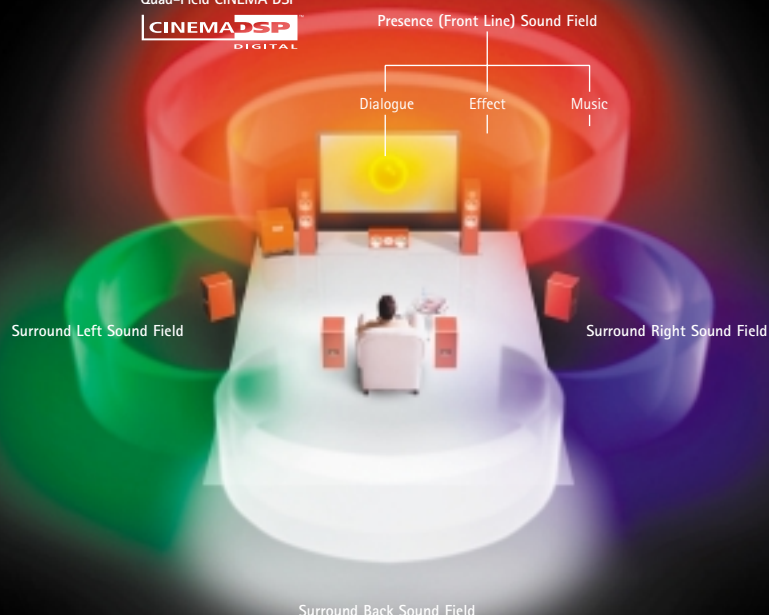
Conventional multichannel systems base their sound on Dolby Digital and DTS decoding, using relatively simple matrix and steering techniques to create surround sound effects. Yamaha's CINEMA DSP Digital technology is much more sophisticated. It naturally decodes the Dolby Digital and DTS movie sound formats, but it also draws on a huge memory of real-world data from actual venues (especially for the music programs) and input from movie sound technicians. This data is stored and processed on Yamaha-developed LSIs, the most powerful audio chips in the world.

Our latest technology, Quad-Field CINEMA DSP actually creates four independent sound fields (front, left surround, right surround and surround back) that merge to envelop you in an unmatched surround sound experience. You hear movies and music with accurate sound localization, smooth movement across the sound space, exceptional clarity and remarkably realistic presence. It will seem as if the walls of your room have disappeared and you are in the middle of your own immense theater!

Conventional  
7.1-Channel Systems



Quad-Field CINEMA DSP  
**CINEMA DSP**  
DIGITAL



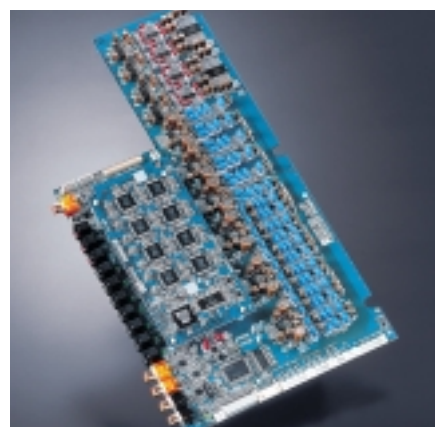
## **CINEMA DSP** DIGITAL

### High-Definition CINEMA DSP Circuitry

The DSP-Z9 has six times greater DSP capacity than previous models, thanks to an increase from 48kHz A/D converters to 96kHz/24-bit types that can accept 96kHz signals for direct digital conversion and processing. Higher density processing enables approximately triple the amount of early reflection data to be handled, for significantly richer surround sound performance. The DSP-Z9 also employs 192kHz/24-bit D/A conversion and DSP processing and Yamaha's 32-Bit Floating-Point Quantization System LSIs (YSS-930 x 4) for high precision decoding of Dolby Pro Logic IIx, Dolby Digital, DTS Digital Surround, DTS 96/24, DTS-ES Discrete 6.1, DTS-ES Matrix 6.1 and DTS Neo:6 formats. There are 55 surround programs available, with 79 variations, including Quad-Field CINEMA DSP programs for 6.1-Channel Digital Surround. SILENT CINEMA for surround sound through headphones and Virtual CINEMA DSP for two-speaker systems are also included.



Yamaha's Exclusive  
YSS-930 32-Bit Floating  
Point Quantization LSI



4-Layer DSP Processing Board in DSP Chamber

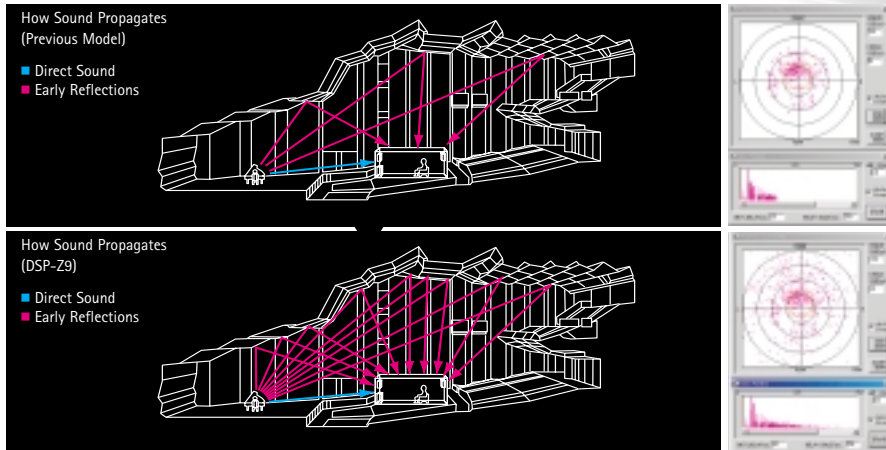
All of the DSP IC chips and related circuitry are located together on a 4-layer board, which provides a number of advantages. The dimensions are smaller (2/3 previous types), so signal paths are shorter and there is more space for the large power supply components. Digital interference is reduced and impedance is lower as well.

### Yamaha Uses Actual Sound Field Data

Yamaha developed a technique called Single Point Quad Miking to precisely capture the acoustic patterns of sound spaces. This complex data is stored and processed on extremely sophisticated LSIs designed and manufactured by Yamaha.



### Triple The Density



### Double The Speed



### 55 Surround Sound Programs

The DSP-Z9 offers a huge range of 55 surround sound programs to choose from, plus another 24 variations of the CINEMA DSP movie programs. For video material, you can select the program that matches your video source, with 12 choices from games and TV sports to Sci-Fi movies. For music, you have 21 choices ranging from European concert halls to disco ambience. Each sound field is created from acoustic data recorded at the actual venues, stored and processed by highly sophisticated Yamaha technology. There are also 16 straight movie format decoding programs and 6 THX programs, including Ultra2\*. Naturally, you can experiment with different programs for each source, and you can also use the GUI menus to adjust numerous parameters for each program. With CINEMA DSP, you will never be bored or dissatisfied with the sound of your system!!

\*THX Ultra2 is a surround program for home use, based on the THX Theater processing developed for movie theater surround sound.

### Audio Delay for Adjusting Lip-Sync

The YSS-930 LSI in the DSP-Z9 provides synchronization of images and sound, which is called lip-sync. The video signal goes through the video processor circuit before it is displayed, which takes time, so it lags behind the audio. The YSS-930 accurately aligns them and even allows the lip-sync parameters to be adjusted using the Audio Delay mode.

### Night Listening Mode

When you're listening to movies late at night and turn down the volume during loud scenes, dynamic range suffers and you may miss some dialogue and other sounds. By using the Night Listening Mode, you can reduce the volume and still enjoy proper tonal balance and dynamic range. You hear dialogue clearly and the music and action are just as exciting (without the screams and explosions disturbing others).

### Enjoy Surround Sound through Headphones

SILENT CINEMA makes it possible to hear large-scale surround sound through ordinary headphones! This is a variation of CINEMA DSP technology that Yamaha developed to let you listen in private to movies and other multi-channel sources for hours without listening fatigue.

**SILENT  
CINEMA™**



### Surround Sound from Only Two Speakers

With just two left and right speakers, the Virtual CINEMA DSP mode will create two additional "virtual" rear speakers, giving you the sense of being in a full-scale surround sound field. So even in rooms with no space for rear speakers, you can enjoy the exciting effects of Dolby Digital and DTS movie sound formats.

### DSP-Z9 Surround Programs 55 Surround Programs (79 Variations)

HiFi DSP Programs	Variations
CONCERT HALL 1	<ul style="list-style-type: none"> <li>● Munich A 1</li> <li>● Frankfurt 1</li> <li>● Stuttgart 1</li> <li>● Munich B 1</li> <li>● Vienna 1</li> <li>● Amsterdam 1</li> </ul>

CHURCH	<ul style="list-style-type: none"> <li>● Tokyo 1</li> <li>● Freiburg 1</li> <li>● Royaumont 1</li> </ul>
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ROCK CONCERT	<ul style="list-style-type: none"> <li>● The Roxy Theatre 1</li> <li>● Warehouse Loft 1</li> <li>● Arena 1</li> </ul>
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9-CH STEREO	<ul style="list-style-type: none"> <li>● 9-Channel Stereo 1</li> </ul>
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CINEMA DSP Programs	Variations
ENTERTAINMENT	<ul style="list-style-type: none"> <li>● Game 1</li> </ul>

MUSIC VIDEO	<ul style="list-style-type: none"> <li>● Pop/Rock 1</li> <li>● DJ 1</li> <li>● Classical/Opera 1</li> <li>● Pavilion 1</li> </ul>
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MOVIE THEATER 2	<ul style="list-style-type: none"> <li>● Adventure 5</li> <li>● General 5</li> </ul>
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Decoder Straight Programs	Variations
	<ul style="list-style-type: none"> <li>● Dolby Digital 1</li> <li>● Dolby Digital/ EX 1</li> <li>● DTS Digital Surround 1</li> <li>● DTS 96/24 1</li> <li>● DTS-ES Matrix 6.1 1</li> <li>● DTS 96/24 ES (6.1) 1</li> <li>● DTS-ES Discrete 6.1 1</li> <li>● Dolby Pro Logic 1</li> <li>● Dolby Pro Logic II Music 1</li> <li>● Dolby Pro Logic II Movie 1</li> <li>● Dolby Pro Logic II Game 1</li> <li>● Dolby Pro Logic IIx Music 3*</li> <li>● Dolby Pro Logic IIx Movie 3*</li> <li>● Dolby Pro Logic IIx Game 1</li> <li>● DTS Neo:6 Music 1</li> <li>● DTS Neo:6 Cinema 1</li> </ul>

THX Programs	Variations
	<ul style="list-style-type: none"> <li>● Cinema 1</li> <li>● Ultra 2 Cinema 1</li> <li>● Music 1</li> <li>● ES Matrix 6.1 1</li> <li>● ES Discrete 6.1 1</li> <li>● Surround EX 1</li> </ul>

### Total 55 Programs

Remarks ● HiFi DSP Programs ● A/V Programs ● CINEMA DSP  
 ● Tri-Field CINEMA DSP Capable ● Quad-Field CINEMA DSP Capable  
\*Only when using surround back x 2 speakers for normal, Dolby Digital and DTS.

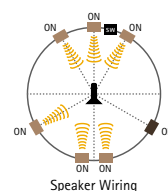


# Easiest to Use

Each generation of Yamaha amplifiers brings an evolution of our popular features while adding innovative enhancements to improve the operating experience. This is why even though our amplifiers are the most technologically advanced, they remain remarkably easy to use and enjoy. The DSP-Z9 continues this tradition with improved on-screen displays, a second menu-dedicated remote control and the all-new YPAO function. Although the DSP-Z9 looks like a formidable machine, you'll soon appreciate just how convenient and enjoyable it is to use.

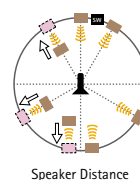
## A World's First! — YPAO (Yamaha Automatic Parametric Room Acoustic Optimizer)

Some components have a graphic equalizer (in fact, this one does too) which admittedly, can be a bit difficult to use. Parametric equalizers are even more effective, but only audio professionals can use them. The DSP-Z9 is the first amplifier to give you the benefits of a 10-band (selected from



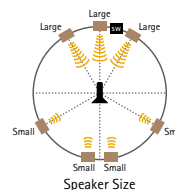
### 1) Speaker Connections

Checks for missing connections and subwoofer phase control (here the right surround speaker is not connected).



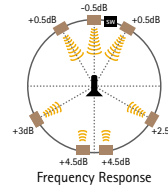
### 2) Speaker Distance

Measures speaker distances from the listening point and corrects for differences down to 5cm.



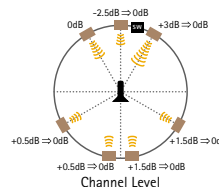
### 3) Speaker Size

Checks speaker sizes (large or small) and subwoofer crossover frequency.



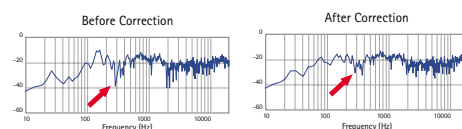
### 4) Speaker Frequency Response

Measures and optimizes each speaker's frequency response using the 10-band parametric equalizer.

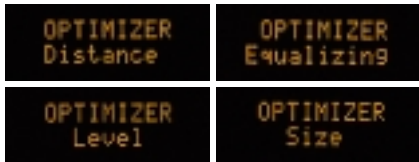


### 5) Sound Pressure Level

Measures and aligns the sound pressure levels of all speakers.



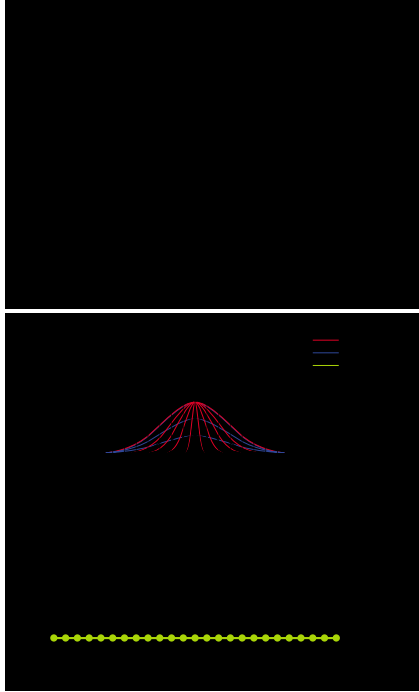
Measures speaker distances from the listening point and down to 5cm.



25 bands) parametric equalizer, which automatically modifies the audio output to provide precisely the best sound for the acoustics of the room.

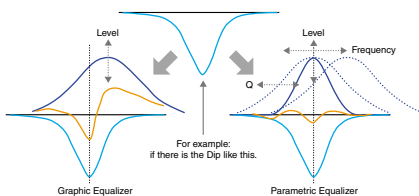
How does it work? The amplifier comes supplied with a high precision Optimizer

#### Graphic Equalizer vs. Parametric Equalizer



#### YPAO

YPAO provides frequency response compensation of all channels via a 10-band parametric equalizer.

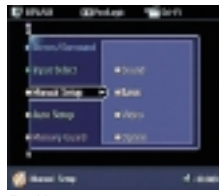


Graphic equalizers adjust only the level, while parametric equalizers adjust level, frequency and Q factor, thus providing more detailed and effective sound equalization.

Microphone, which you simply place in the position where you most frequently listen. Activating the YPAO function causes test tones to be emitted from the speakers. These tones are picked up by the Optimizer Microphone and then analyzed. Based on the results, a variety of audio parameters are precisely calibrated to optimize the sound at the listening position. The factors that are analyzed are speaker positions, speaker connections and phasing, speaker size, speaker distances, sound pressure levels and speaker frequency response. In short, the DSP-Z9 not only delivers better sound, it delivers the BEST sound for each and every room.

#### On-Screen Display with GUI and Dedicated Remote Control

The DSP-Z9 has the best looking and easiest to use on-screen display you've ever seen. This is due in part to the high quality video circuitry,



Top Menu



DSP Settings



Graphic Equalizer



Speaker Settings

which provides sharp, clear images. The GUI (Graphical User Interface) includes extensive yet easily understandable setup menus and has been designed to make it easy to select and adjust desired functions.



And to further simplify operation, Yamaha has provided a second remote control dedicated to GUI use. The large round cursor control in the center makes it easy to navigate the on-screen menus and enter desired commands. It also has power, volume and mute buttons.

#### Easy Setup and Operation

The DSP-Z9 has an ergonomic design that ensures simple, convenient operation. Everything from the layout of the controls to the appearance and selection of the operating menus has been planned to make using it easy and enjoyable.

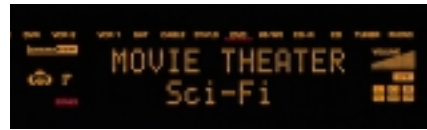
#### Wide Range of Detailed Menus

The remote control lets you access and adjust a wide range of menus on the on-screen display, for total operational control. You can use the Auto Setup menu to select which speaker parameters will be automatically adjusted, or you can adjust speaker and system parameters yourself via Manual Setup, which includes four menus. Basic for setting speaker and subwoofer parameters, Sound for adjusting Cinema EQ, Graphic EQ and other audio functions, Video for selecting Picture Mode, Resolution and five other settings, and Option for Multi-Zone and other functions. There are also Input Select, i.LINK Select, Stereo/Surround, Memory Guard and Signal Info menus.



#### Program Name and Surround Sound Indications

The front panel display presents comprehensive information about operating status, including the program name, whether it is a Tri-Field or Quad-Field CINEMA DSP program, and much more. You'll never be confused about what mode you are in.



# Versatile Connections and Multi-Room Use

## Ideal for Use in Custom Installations

The DSP-Z9 has numerous features designed to facilitate use in customized multi-room installations. These include Zone 2 coaxial, video (including S-Video) and audio outputs for multi-room control capability, two trigger outputs for automatic power-on of other components, speaker A/B and A+B selection, an RS-232C interface and remote control IR code input/output compatibility. In addition, the Rec Out Selector also functions as a Zone 2 selector.

## Extensive Connections for All the Components You Want!

As shown here, the range of connections on the DSP-Z9's rear panel is large enough to meet all of your system building needs. Note that a number of these terminals are fixed and assignable,

meaning that they can be independently assigned to sources of your choice or defaulted to fixed settings.

### A/V Rec Out/Zone 2 Selector

The Rec Out Selector lets you choose which source you want to record. As you are recording, you can listen to that source or to the source selected by the Input Selector. The Rec Out Selector also functions as a Zone 2 Selector.

### Dialogue Lift

When using a center speaker positioned below the screen, dialogue may not be heard with maximum clarity. The Dialogue Lift function causes part of the center channel sound to be output from the left and right presence speakers, so the center speaker sounds as though it is right where you are sitting.

## Fixed and Assignable Terminals

Yamaha offers terminals that can be either independently assigned to sources or defaulted to fixed settings.

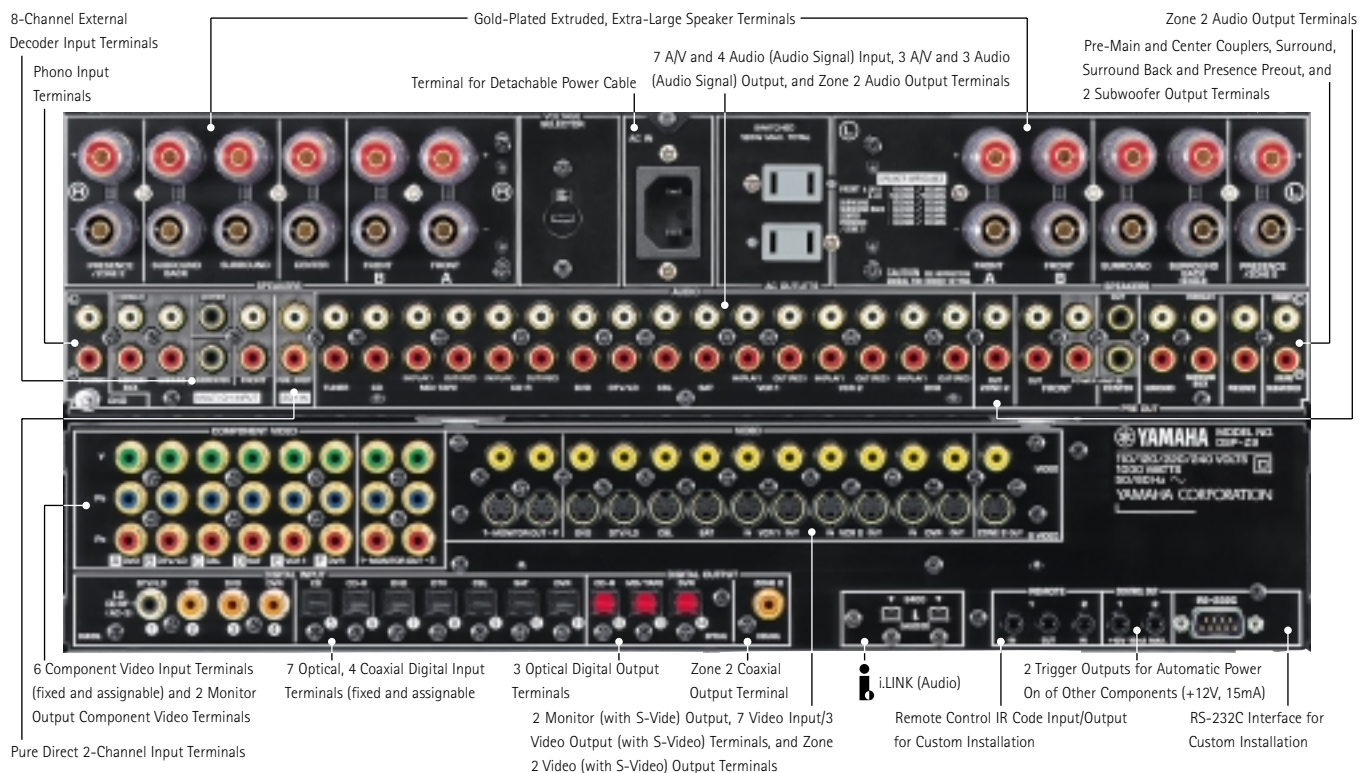
### Detachable Power Cable

The inlet-type power cable is separate, rather than attached to the unit. It is a thicker type (16-gauge) than ordinary power cables, for higher power handling capacity.

## Auto Priority Input Terminal Selection and Auto Decoder Selection

Digital input terminals are provided to handle any kind of digital input. Functions are programmed to select priority in order of coaxial digital, optical digital and analogue when different digital formats are input from the same source. The

## DSP-Z9 Rear Panel Connections





sound decoder is also automatically selected and processed according to the combination of the format of input signals and the selected sound field programmes, while DSP sound field processing is optimized at the same time.

### Video Inputs on Front Panel

A panel on the front of the amplifier flips up to

reveal a number of controls and video input terminals. These include video and audio terminals as well as optical digital and S-Video inputs. This makes it convenient to connect a game machine for DVD games or even movies, or other devices such as a camcorder.



DSP-Z9 Inputs and Outputs

			Coaxial		Optical		Composite		S Video		Component Video	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
PHONO	■		■		■	■						
CD	■		■		■	■						
CD-R	■	■	■		■	■	■	■				
DTV/LD	■		●		■	■	■	■				■
SAT	■		■		■	■	■	■				■
VCR 2	■	■	■		■	■	■	■	■	■		■
Video Aux	■				■		■					
Monitor Out 2								■		■		■
Multi-Ch	■											

#### Other Connection Features

- Speaker configuration of analog multi-channel input (C/SL/SR/SBL/SBR/Subwoofer/None)
- Level setting for each input

Fixed (■), Fixed/Assignnable (●) and Assignable (■) Terminals.  
 RF (AC-3) terminal for LD input (●) is assignable as coaxial digital terminal.  
 ■: HDTV (720p/1080i) Compatible Component Video Out

### Direct Access Remote Control

The remote control can "learn" the functions of other components, so you can use it as a single remote for the entire system. It has a large memory capacity and comes pre-encoded with many television and component codes. The buttons in the component control area have different functions for each type of component, selected by pressing the input button. The input name is shown in the LCD window, and you can change each name. Frequently used functions are easily accessible on the front, while others are located under the sliding panel. Finally, 15 different macros (multi-command) functions can be programmed.



# DSP-Z9 Digital Home Theater Amplifier

## DSP-Z9 Main Specifications

### AUDIO SECTION

Maximum Power			
Front Channels		250 W + 250 W	
Center Channel		250 W	
Surround Channels		250 W + 250 W	
Surround Back Channel		250 W + 250 W	
Presence Channel		70 W + 70 W	
Minimum RMS Output Power (8 ohms, 20 Hz–20 kHz, 0.015% THD)			
Front Channels		170 W + 170 W	
Center Channel		170 W	
Surround Channels		170 W + 170 W	
Surround Back Channel		170 W + 170 W	
Presence Channel (1 kHz, 0.5% THD)		50 W + 50 W	
High Dynamic Power, Low-Impedance Drive Capability			
Dynamic Power/Channel		Yes	
	8 ohms	210 W	
	6 ohms	260 W	
	4 ohms	340 W	
	2 ohms	580 W	
Linear Damping			
Damping Factor (8 ohms, 20 Hz–20 kHz)		Yes	
Input Sensitivity/Impedance		200 (front/center, speaker A)	
	Phono (MM)	2.5 mV/47 k-ohms	
	CD	200 mV/47 k-ohms	
Frequency Response		10 Hz–100 kHz +0, -3 dB	
Total Harmonic Distortion (20 Hz–20 kHz)			
CD (Front/Center In, Sp Out, 85 W/8 ohms)		0.005%	
Signal-to-Noise Ratio (CD, 250 mV) 100 dB			
Speaker/Headphone Tone Control Characteristics (Front/Center/Subwoofer)			
Bass	Boost/Cut	+6 dB/-6 dB (50 Hz)	
	Turnover Frequency	125 Hz/350 Hz/500 Hz	
Treble	Boost/Cut	+6 dB/-6 dB (20 kHz)	
	Turnover Frequency	2.5 kHz/3.5 kHz/8 kHz	

### Manual Graphic Equalizer (Front/Center/Surround/Surround Back/Presence)

f=63 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz and 16 kHz	
Q=1.2	Step=0.5
	+6 dB/-6 dB

### YPAO (Yamaha Parametric Room Acoustic Optimizer)

f=63 Hz – 16 kHz	+6 dB/-20 dB, 10 bands
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### Crossover Characteristics (Subwoofer Out)

40, 60, 80, 90, 100, 110, 120, 160 and 200 Hz	
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### Cinema Equalizer

High Shaving Filter	Frequency	1 kHz – 12.7 kHz
	Boost/Cut	+6 dB/-9 dB
Parametric Equalizer	Frequency	1 kHz – 12.7 kHz
	Boost/Cut	+6 dB/-9 dB

### VIDEO SECTION

Video Signal Level		1 Vp-p/75 ohms
S-Video Signal Level	Y	1 Vp-p/75 ohms
	C	0.286 Vp-p/75 ohms
Component Video Signal Level	Y	1 Vp-p/75 ohms
	Pb/Cb, Pr/Cr	0.7 Vp-p/75 ohms
Signal-to-Noise Ratio		70 dB (processor off)
Monitor Out Frequency Response		
Composite/S-Video Signal		5 Hz–10MHz -3 dB
Component video Signal		5 Hz–100MHz -3 dB

### GENERAL

Standby Power Consumption		Less than 1 W
Dimensions	(W x H x D)	435 x 211 x 471 mm
Weight		30 kg



Yamaha's unique technology for the creation of sound fields is capable of powerfully reproducing the three-dimensional environment that movie sound engineers aim to convey, in any audio format from monaural to the latest 6.1-channel digital surround. It is compatible with DVD and all other A/V sources.

Yamaha CINEMA DSP technology has received a patent in the U.S. (Patent No. 5,261,005).

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